SPAWAR Systems Center San Diego

Space and Naval Warfare Systems Center, San Diego (SSC San Diego)

ROBOTICS UPDATE

"Providing network-integrated robotic solutions for C4ISR applications."

www.spawar.navy.mil/robots/ Winter 2007 / Vol. 7, No. 2

Unmanned Systems Branch Honors WWII UAV Pioneer

Mrs. Robert F. (Judy) Merry arrives at building F-36, flanked by FC2 Mendell Baker (left) and AT1 James Overton of the Unmanned Systems Reserve Unit.

On 4 September 2007, the Unmanned Systems Branch (Code 2371) paid tribute to Chief Aviation Machinist Mate Robert Merry, a pioneer of World War II unmanned air vehicle (UAV) technology. Chief Merry's widow, Judy Merry, was presented with a commemorative plaque recognizing her husband for his many contributions to Special Task Air Group One (STAG-One), one of the most successful (yet virtually unknown) UAV programs of the war.

Television-guided *TDR-1* assault drone "Edna III" being readied for launch with a 2,000-pound bomb.

The US Navy's interest in UAVs began in 1936 when Admiral William Standley, Chief of Naval Operations, witnessed a demonstration of the British "Queen Bee" – a radio-controlled target drone used for antiaircraft gunnery practice. Lieutenant Commander Delmar Fahrney was soon detailed as Officer in Charge of the *Radio-Controlled Aircraft Project*, established at the Naval Aircraft Factory in Philadelphia to provide aerial targets for the fleet.

The program's first unmanned flight was conducted on 15 November 1937, and continued success throughout the next several months led to a significant increase in the use of target drones by the Navy. When tests showed radio-controlled UAVs were also able to hit ground or surface targets, *Project Option* was formed in 1942 to develop assault drones for offensive combat roles.

As first envisioned, this was to be no small endeavor, but a billion-dollar program involving 5,000 drones, 18 operational squadrons, and the dedicated labor of some 10,000 civilian and military personnel. Extensive Fleet losses at Midway and Coral Sea, however, forced the Navy to balance competing objectives with regard to aircraft production, and the number of drones was scaled back to 500.

Lieutenant Commander Craig Ozaki reads the plaque inscription to Judy Merry.

Under *Project Option*, STAG-One built and deployed the first successful television-guided UAV used against defended enemy positions. The *TDR-1*, a dihedral low-wing design powered by two 220-horsepower 6-cylinder Lycoming engines, was capable of reaching 173 MPH while carrying

Chief Aviation Machinist Mate Robert Merry on STAG-One's operational deployment during WWII, Banika, South Pacific.

Bart Everett presents commemorative plaque to Judy Merry.

a 2,000-pound bomb load.

A special training base for STAG-One was constructed at Naval Air Station (NAS) Clinton in Oklahoma. A contingent of about 20 personnel was brought in from Utility Squadron *VJ-6* to serve as instructors in four key technical areas: 1) hydraulic actuation and control, 2) the radio altimeter, 3) television, and 4) radar.

Upon completion of their technical training at NAS Clinton, STAG-One relocated to NAS Traverse City to begin over-water training and carrier qualification on the USS Sable (IX-81), one of two coal-fired paddle-wheel aircraft carriers operating on Lake Michigan.

Since training vessels operating within this landlocked body of water would have no requirement for armament, radar, or defensive escorts, conversion of existing commercial vessels could meet these reduced needs without drawing upon limited Fleet carrier resources.

In 1943, STAG-One relocated to Banika, one of the Russell Islands just north of Guadalcanal in the British South Solomon Islands, where the squadron began operational testing. Two detachments were soon deployed to Stirling and Green Island for attacks against Japanese positions on Bougainville and Rabaul.

Bart Everett describes technical highlights of the autonomous *MDARS Exterior* security robot to Judy Merry.

The first combat mission took place on 27 September 1944, when a *TDR-1* of *VK-12* destroyed an antiaircraft battery on a beached Japanese merchant ship near Kahili Airdrome on Bougainville. The *TDR-1* achieved an unprecedented 46-percent hit rate in the first 30 days of operations, as compared to 1-2 percent for conventional manned bombers of the time.

Despite this impressive success, however, the program was shelved in late 1944. With unchallenged air supremacy established over Japan, and given the fateful decision to use nuclear weapons to end the war, a fledging standoff capability for small-scale surgical strikes seemed overtaken by events, and *Project Option* was cancelled.

All remaining *TDRs* were shipped to Naval Ordnance Test Station (NOTS) China Lake to serve as expendable target drones for proximity-fuse and missile testing. Only one lone survivor bears testament to the monumental legacy of this aircraft today, innocuously hanging from the ceiling of the National Museum of Naval Aviation in Pensacola, FL.

Raised on a farm in South Dakota, Robert Merry enlisted in the Navy in 1939. During the war he served as a flight engineer on the Grumman *TBM-1C Avenger* mother planes that controlled the *TDR-1*. He also assembled and maintained the UAV's electric, hydraulic, radio control, and communications systems. Following his 20-year active-duty career, he worked as a civil servant at North Island Naval Air Station, and then served another 17 years as a volunteer at Scripps Hospital in Chula Vista.

Lieutenant Commander Delmar Fahrney, who rose through the ranks to become a Rear Admiral, is remembered today as the US Navy's "Father of Guided Missiles."♦

Refreshments served at the reception following the ceremony also paid tribute to the pioneering accomplishments of STAG-One.

A beautifully restored *TDR-1* on display at the National Museum of Naval Aviation in Pensacola, FL. (US Navy photo courtesy Jim Curry).

ROBOTICS UPDATE

is published quarterly by:

SPAWAR Systems Center San Diego, Code 7171
Unmanned Systems Branch

Kathryn M. Curd, Editor
robotics@spawar.navy.mil

Released by:
H.R. (Bart) Everett
Technical Director for Robotics

www.spawar.navy.mil/robots/